IN THE CLAIMS:

1. (Currently Amended) Wireless radiofrequecy data system comprising:

a base-station comprising N ~~multiple~~ first sets and a signal processing-unit, ~~wherein each first set comprises a transmitter-and receiver-unit provided with a transmitter and a receiver and at least one antenna which is connected to the transmitter-and receiver-unit, wherein the signal processing-unit is~~ connected with each of the N first sets for processing signals received and to be transmitted by the N first sets ~~and processing signals to be transmitted by the first sets~~, and

M ~~multiple~~ seconds sets with N greater than M, wherein each first set and each second set comprises a transmitter-and receiver-unit having at least one antenna and provided with a transmitter and a receiver that operate on essentially the same radiofrequency or radiofrequency-band, wherein ~~and at least one antenna which is connected to the transmitter-and receiver-unit, characterised in that,~~ the signal processing-unit is provided with an inputport for inputting M signals Q to be received by the respective M second sets and comprises information about ~~the~~ transfer-functions H of radiofrequency signals from each of the antennas of the N first sets to each of the antennas of the M second sets and/or vice versa, ~~and wherein the transmitters and receivers, both in the N first sets and in the M second sets, operate on essentially the same radiofrequency or radiofrequency-band,~~ and wherein the signal processing-unit processes the signals received and to be transmitted by the N first sets ~~and processes the signals to be transmitted by the first sets~~ on the basis of said transfer functions H such that for each second set of a plurality of the M second sets an individual communication channel is formed with the base-station wherein these communication channels are generated simultaneously and separately from each other, wherein the processing unit is arranged to process the M signals Q in combination on the basis of information of the transfer-functions H to establish

-2-

M of said simultaneous communication channels by processing on the basis of the information about the transfer-functions H, the M signals Q to obtain the N transmit-signals R, to be transmitted by the first sets to the second sets, according to

$$R = P_D Q, \quad (A)$$

resulting in that the M signals Q are received separately by the respective second sets if the second sets each receive the N transmit-signals, where $P_D = [H^*(H^*H)^{-1}]^T$ is the pseudoinverse of H^T and where H^* is the complex conjugated and transposed of H, wherein H is a complex [N*M] matrix containing transfer functions h_{ij} (i=1, .N; j=1,...,M), wherein h_{ij} is the transfer function for transmission from the jth second set of the M second sets to the ith first set of the N first sets, and where Q is a complex M dimensional vector $[Q_1, Q_2, ..., Q_j, ..., Q_M]^T$ wherein Q_j is the signal to be transmitted to the jth second set of the M second sets and where $R = [R_1, R_2, ..., R_i, ..., R_N]^T$ wherein R_i is the transmit-signal to be transmitted by the ith first set of the N first sets.

2. (Original) Wireless radiofrequency data communication system according to claim 1, characterised in that, the communication channels are duplex communication channels.

Claims 3-6 (Canceled)

7. (Currently Amended) Wireless radiofrequency data communication system according to claim 10 6, characterised in that each second set comprises a serial-to-parallel/parallel-to-serial unit, which unit, in use, splits the data signal of said second set in a multiple of signals, an means for modulating these signals on different frequencies according to the Inverse Fast Fourier Transformation, and wherein each first set comprises a unit for executing a Fast Fourier Transformation on the signals received by said first set and means for combining the transformed signals in order to recover said data-signal.

-3-

8. (Original) Wireless radio-frequency data communication system comprising in use:

k1 multiple first groups, wherein each first group comprises a transmitter-unit and at least one antenna which is connected to the transmitter-unit for transmitting a signal; and

k2 multiple second groups , which each second group comprises a receiver-unit and at least one antenna which is connected to the receiver-unit,

characterised in that, the wireless radiofrequency data communication system further comprises a signal processing-unit which is $k_1 > k_2$ connected to each of, the first groups and which is, if $k_1 < k_2$, connected to each of, the second groups, wherein the signal processing-unit comprises information about the transfer-functions of radiofrequency signals from each of the first groups to each of the second groups, and/or vice versa, and wherein, each of the transmitter-units, of the first groups operates on essentially the same radiofrequecy or radio frequency band, and wherein, in use, if $k_1 > k_2$, the signal processing-unit processes k_2 data-signals to be transmitted to the k_2 second groups for obtaining k_1 signals which are supplied to the respective first groups to be transmitted, where the k_2 data signals are processed on the basis of said transfer functions in such a manner that the respective second groups will receive separately the respective k_2 data-signals, thereby establishing k_2 simultaneous communication channels, and wherein, in use, if $k_1 < k_2$, the signal processing-unit processes k_2 signals, which are received by the respective second groups on the basis of said transfer functions in such way that an estimation is made of the k_1 signals transmitted by the first groups, thereby establishing k_1 simultaneous communication channels.

9. (Original) Wireless radiofrequency data communication system according to claim 8, characterised in that each first group comprises a serial-to-parallel.parallel-to-serial unit, which unit, in use, splits the data signal in a multiple of signals, and means for modulating these signals on

-4-

different frequencies according to the Inverse Fast Fourier Transformation, and wherein each second group comprises a unit for executing a Fast Fourier Transformation on the signal received by said second group and means for combining the transformed signals in order to recover said data-signal.

10. (New) Wireless radiofrequecy data system comprising:

a base-station comprising N ~~multiple~~ first sets and a signal processing-unit, ~~wherein each first set comprises a transmitter-and receiver-unit provided with a transmitter and a receiver and at least one antenna which is connected to the transmitter-and receiver-unit, wherein the signal processing-unit is~~ connected with each of the N first sets for processing signals received and to be transmitted by the N first sets ~~and processing signals to be transmitted by the first sets~~, and

M ~~multiple~~ seconds sets with N greater than M, wherein each first set and each second set comprises a transmitter-and receiver-unit having at least one antenna and provided with a transmitter and a receiver that operate on essentially the same radiofrequency of radiofrequency-band and, in use, each of the M second sets transmits a signal so that M signals are transmited to be received in combination by the N first sets, wherein ~~and at least one antenna which is connected to the transmitter-and receiver-unit, characterised in that,~~ the signal processing-unit comprises information about ~~the~~ transfer-functions $\underline{H}$ of radiofrequency signals from each of the antennas of the first sets to each of the antennas of the second sets and/or vice versa, and ~~wherein the transmitters and receivers, both in the first sets and in the second sets, operate on essentially the same radiofrequency or radiofrequency-band, and wherein the signal processing-unit~~ processes the signals received and to be transmitted by the N first sets ~~and processes the signals to be transmitted by the first sets~~ on the basis of said transfer functions $\underline{H}$ such that for each second set of a plurality of the $\underline{M}$ second sets an individual communication channel is formed with the base-station wherein these communication

-5-

channels are generated simultaneously and separately from each other, wherein the signal processing-unit is arranged to recover the M signals transmitted by the M second sets separately from each other, thereby obtaining M of said simultaneous communication channels, by processing on the basis of the information about the transfer-functions H, the signals r which are received by the first sets, to calculate an estimation x_est of the M signals x^c which were transmitted by the M second sets, according to the mathematical expression

$$x\_est = P_U r, \quad \text{(B)}$$

where $P_U = [(H^*H)^{-1} H^*]$ is the pseudo-inverse for H and where H^* is the complex conjugated and transposed of H, wherein H is a complex $[N*M]$ matrix containing transfer functions h_{ij} ($i=1,...,N$; $j=1,...,M$), wherein h_{ij} is the transfer function for transmission from the jth second set of the M second sets to the ith first set of the N first sets, r is a complex N dimensional vector $[r_1,...,r_i,...,r_N]^T$ with r_i the signal received by the ith first set of the N first sets, x_est is a complex M dimensional vector $[x\_est_1,...,x\_est_j,...,x\_est_M]^T$ where x_est_j is an estimation of x^c_j, and wherein x^c is a complex M-dimensional vector $[x^c_1,...,x^c_j,...,x^c_M]^T$, with x^c_j being the signal transmitted by the jth second set of the M second sets.